Money Isn't All You're Saving

United States
Environmental Protection Agency

Establish Design Target *Benchmark* Energy Performance *Achieve* ENERGY STAR®

Energy Performance Rating for New Building Design

The ENERGY STAR performance rating is a score based on a scale of 1 to 100. For new building design, the US Environmental Protection Agency (EPA) recommends setting a target and monitoring progress throughout the Design Process, by using Target Finder. With Target Finder you can set an aggressive energy performance target for new design and compare your estimated energy consumption to the established target. By comparing simulated energy performance to the target you can determine if design changes are needed to achieve your goal, eliminate costly redesigns at the end of the project, and help integrate energy performance strategies that can not be eliminated because of budget and schedule changes.

For ENERGY STAR labeled buildings the score is calculated from energy consumption based on utility bills after a year of building operation and occupancy. Most labeled buildings score 85 or better on EPA's benchmark rating scale, although 75 is the minimum requirement to qualify for a label. Therefore, establishing an energy performance target that exceeds typical building design is recommended and achievable for new building design.

Derivation of Target Finder Data

- Data used to derive the benchmarking algorithms were obtained from US Department of Energy's (DOE) Commercial Building Energy Consumption Survey
- Algorithm development determined key drivers influencing energy use, such as size, location, operating characteristics, etc.
- An approach was developed to compare performance against US building stock

Establish an Energy Performance Target and Benchmark

The purpose of establishing an energy performance target is to give energy design decisions focus and direction. When you use Target Finder to establish a target then compare your estimated performance to the target, you can determine if you are moving toward your desired goal.

Benchmark to Success

Energy Star recommends that you:

- Set a target for energy performance comparable to top performing buildings
- Develop a comprehensive plan that will meet the target
- Compare estimated energy consumption to the target as the design develops

ENERGY STAR® IS A REGISTERED TRADEMARK

The energy performance target is the metric to measure your performance by and your guide to achieving desired goals.

"The Benchmarking Boost", *Energy User News*, April 1999 says that, "Benchmarking is more than just comparing numbers. The results offer insight to decrease costs and to help managers/employers do their job better. When done successfully, benchmarking gives companies the competitive edge they need to stay ahead."

ENERGY STAR makes it easy to:

- Establish an energy performance target during conceptual design
- Compare your estimated energy consumption to an established performance target at strategic phases during design process
- Save time, money, and energy
- Evaluate energy decisions during the design and make necessary improvements to achieve your energy performance goal
- Explore new design schemes and measure their effectiveness before committing concepts to paper...develop innovative energy design strategies
- Adopt and deploy best practices to achieve top energy performing buildings

Set Energy Performance Target

You can set a target for energy performance comparable to top performing buildings in Target Finder by entering basic building design characteristics: size, location (zip code), estimated operating hours and occupant patterns. It will provide kBtu/sf/yr with the applicable energy performance score.

Compare Estimated Energy Consumption

Check estimated energy consumption against your target by entering estimated annual energy consumption in Target Finder. You can compare simulated energy performance to your established target. This should be done iteratively as changes are made that influence energy performance. Your design team should consult an energy analyst or engineer for estimated annual energy consumption calculations.

Design Tools and Energy Performance Target

Most energy design tools are computer-based and allow you to input information about your building or design to get energy use estimates (usually for a one-year period). A variety of design tools are available, and their complexity will determine which stage of design they are best suited. During both schematic design and design development your design can be iteratively evaluated using a design tool and checked against your target. By entering estimated annual energy in Target Finder you can compare your design's performance score to your target. The DOE tool directory is a good place to assess available design tools (http://www.eren.doe.gov/buildings/tools_directory/)

Visit our Web site **www.energystar.gov** and use **Search: Target Finder.**